originates in 44 countries, and is published in 22 languages other than English. The space of time elapsing from the receipt of the publication until the abstract is distributed is reasonably brief and compares favorably with other services.

The Engineering Index Catalog will enable you to understand how simple it will be for you to obtain what you want from the mass of engineering information published in current technical engineering literature, no matter where it is printed. It is furnished in such brief and concise form that it will conserve your time, energy and expense, and keep you fully informed of what is worth while and pertinent to your interest.

The Engineering Index Service cards subsequently appear as a Bound Volume cumulating all of the references of the year. This volume, now in its 75th year, is an internationally accepted digest of technological literature prepared for engineers, research workers, and students. The Engineering Index has always been industry's authentic guide to the periodical technical literature. Today it still stands unrivaled. Engineers consider it a vital part of their reference equipment.

The progressive engineer knows that he must interest himself in all branches of technical research. He knows that the time has passed when he could limit his thinking to the field of engineering in which his immediate interests are involved. He realizes that he must be familiar with current developments in all phases of engineering and must inform himself concerning social and economic trends in order to assist in the solution of the major problems confronting humanity today.

INDUSTRIAL ENGINEERING RESEARCH AWARD

The American Institute of Industrial Engineers announces that the deadline for nominations for its annual research awards is January 1, 1960.

The awards consist of prizes for the best paper written on industrial engineering by a graduate student and for the best paper written by a person engaged in teaching, research, practicing industrial engineering or a related field.

For further information write:

Dean Norman N. Barish
College of Engineering
New York University
University Heights
New York 35, New York

INDEX TO VOLUME X

AUTHOR LISTING

Amrine, Harold T., (co-author), A Physiological Appraisal of Selected Principles of Motion Economy, September-October 1959, p. 373.

Bach, G. L., Industrial Administration: Education for 1980, September-October 1959, p. 390.

Canning, Francis L., Estimating Load Requirements in a Job Shop, November-December 1959, p. 447.

Canning, Richard G., (co-author), Information Process Analysis, November-December 1959, p. 470.

Chatto, K., (co-author), Linear Programming in the Packing Industry, September-October 1959, p. 364.

Chorafas, Dimitris N., Systems Engineering in the Engineering Curriculum, March-April 1959, p. 135.

Cochran, E. B., The Organization of Controllership, July-August 1959, p. 268.

Colley, John L., Jr., Simulation as a Production Aid, July-August 1959, p. 296.

Conway, R. W., (co-author), The Manufacturing Progress Function, January-February 1959, p. 39.

Cox, C. B., (co-author), Linear Programming in the Packing Industry, September-October 1959, p. 364.

Cox, John M., Labor Incentives—A Failure and a Success, March-April 1959, p. 114.

Craft, Clifford J., (co-author), Competitive Management Simulation, September-October 1959, p. 355.

DeForest, Elliott, People Are Funny: Industrial Engineering and the Human Equation, May-June 1959, p. 209.

DeGarmo, E. Paul, (co-author), Reasons Used by Corporations to Justify Leasing of Trucks and Automobiles, March-April 1959, p. 152.

Dudek, Richard A., An Approach to Promoting the Applications of Statistical Techniques by the Industrial Engineer, January-February 1959, p. 9.

Ehrenfeld, Sylvain, (co-author), Industrial Engineering Techniques and Operations Research, November-December 1959, p. 439.

Fougner, T. E., Notes on Industrial Engineering in Europe, November-December 1959, p. 461.

Francis, David L., Management and Industrial Engineering in the Coal Industry, September-October 1959, p. 347.

Gainen, Leon, Inventory Control—Exploiting the Electronic Data Processor in the Air Force, January-February 1959, p. 32.

Gambrell, C. B., Jr., The Independence of Pace Rating versus Weight Handled, July-August 1959, p. 318.

Gilbert, Owen, A Biologist in Steel, November-December 1959, p. 455.

Grad, Burton, (co-author), Information Process Analysis, November-December 1959, p. 470.

Gradwohl, A. J., (co-author), Obsolescence and Economic Lot Size, September-October 1959, p. 352.

Grassi, R. C., (co-author), Obsolescence and Economic Lot Size, September-October 1959, p. 352.

Greene, James H., (co-author), A Method for Measuring Physiological Cost of Work, May-June 1959, p. 180.

Greene, James H., (co-author), The Design of a Force Platform for Work Measurement, July-August 1959, p. 312.

Greene, J. H., (co-author), Linear Programming in the Packing Industry, September-October 1959 p. 364.

Gustat, George H., President's Message: Human Relations in the Industrial Engineer, January-February 1959, p. 67.

Gustat, George H., President's Message: The Importance of Participation, March-April 1959, p. 155.

Gustat, George H., President's Message: Tomorrow's Problems, Today's Opportunities, May-June 1959, p. 219.

Guyatt, Cecil W., The Art of Methods Engineering, September-October 1959, p. 386.

Halty, Maximo, Incentive Wage Practice for Restricted Work, November-December 1959, p. 457.

Herrick, John S., Using Work Sampling to Study the Activities of Research Workers, January-February 1959, p. 60.

Hicks, C. R., (co-author), Linear Programming in the Packing Industry, September-October 1959, p. 364.

Howe, William G., (co-author), A Control Procedure Applied to Subjective Evaluations, March-April 1959, p. 138.

Ingenohl, Ingo, Measuring Physical Effort, March-April 1959, p. 99.

Jacobs, Richard M., The Compatibility of Value Engineering Analysis and Reliability, January-February 1959, p. 54.

Jaffe, William J., The Engineering Community and the Industrial Engineer, March-April 1959, p. 122.

Johnson, Cecil G., Summary of the Industrial Engineering Symposium, Georgia Institute of Technology, November 1957, May-June 1959, p. 223.

Johnson, Frank J., President's Message, July-August 1959, p. 332.

Johnson, Frank J., President's Message: Our Institute and Research, September-October 1959, p. 401.

Johnson, Frank J., President's Message: Professional Relations, November-December 1959, p. 477.

Kane, G. E., (co-author), The Effect of Hypergeometric Probability Distribution on the Design of Sampling Plans for Small Lot Sizes, November-December 1959, p. 467.

Kelly, Thomas E., How to Measure and Appraise your Industrial Engineering Department Performance, March-April 1959, p. 144.

Kilbridge, M. D., Predetermined Learning Curves for Clerical Operations, May-June 1959, p. 203.

Klein, Morton, Double Sample Estimation in Work Measurement, May-June 1959, p. 193.

Knowlton, Stuart L., A Simplified Approach to Waiting Lines, November-December 1959, p. 423.

Kraai, Erwin P., (co-author), Statistical Scheduling of a Highly Mechanized Production Facility, January-February 1959, p. 17.

Krick, Edward V., The Engineer and Resistance to Change, January-February 1959, p. 21.
Lehrer, R. N., The Challenge of Operations Research, March-April 1959, p. 87.
Llewellyn, R. W., Order Sizes for Job Lot Manufacturing, May-June 1959, p. 176.
Malcolm, D. G., (co-author), Summary of the Industrial Engineering Symposium, the University of Iowa, November, 1958, July-August, 1959, p. 323.
Maynard, Harold B., Industrial Engineering—Training for Management, January-February 1959, p. 3.
McGuire, W. J., Operations Research in Management Planning and Control, July-August 1959, p. 308.
Mellin, Warren R., What Is an Organized Methods Improvement Program?, November-December 1959, p. 426.
Mindlin, Albert, The Application of Sample Survey Methodology to Work Sampling, July-August 1959, p. 286.
Mitten, L. G., A Scheduling Problem, March-April 1959, p. 131.
Moder, Joseph J., (co-author), An Investigation of Some Factors Affecting the Hand Quality Picking of Small Objects, May-June 1959, p. 213.
Morris, W. H. M., (co-author), A Method for Measuring Physiological Cost of Work, May-June 1959, p. 180.
Morris, W. H. M., (co-author), The Design of a Force Platform for Work Measurement, July-August 1959, p. 312.
Morris, William T., Inventorying for Unknown Demand, July-August 1959, p. 299.
Nadler, Gerald, Work Design: A Philosophy for Applying Work Principles, May-June 1959, p. 185.
Nichols, D. Edward, (co-author), A Physiological Appraisal of Selected Principles of Motion Economy, September-October 1959, p. 373.
O'Connor, Thomas F., Cyclic Servicing, July-August 1959, p. 303.
Oswalt, Jesse H., (co-author), An Investigation of Some Factors Affecting the Hand Quality Picking of Small Objects, May-June 1959, p. 213.
Peacor, Robert W., (co-author), A Control Procedure Applied to Subjective Evaluations, March-April 1959, p. 138.
Perkowski, N., The Research Laboratory, July-August 1959, p. 255.
Pounds, William F., (co-author), Statistical Scheduling of a Highly Mechanized Production Facility, January-February 1959, p. 17.
Price, H. Walter, Least-Cost Testing Sequence, July-August 1959, p. 278.
Randolph, Paul H., Construction of Linear Programming Model, March-April 1959, p. 118.
Reed, Ruddell, Jr., A Planned Transition to Mechanized Inventory Control, May-June 1959, p. 201.
Richman, Eugene, (co-author), Industrial Engineering Techniques and Operations Research, November-December 1959, p. 439.
Ritchey, John A., An Unusual Work Sampling Application, November-December 1959, p. 450.
Rockwell, Thomas H., Safety Performance Measurement, January-February 1959, p. 12.
Rodgers, Joseph F., (co-author), Reasons Used by Corporations to Justify Leasing of Trucks and Automobiles, March-April 1959, p. 152.
Rokhsar, A. E., (co-author), The Effect of Hypergeometric Probability Distribution on the Design of Sampling Plans for Small Lot Sizes, November-December 1959, p. 467.
Salveson, Melvin E., Long Range Planning in Technical Industries, September-October 1959, p. 339.
Schultz, Andrew, Jr., (co-author), The Manufacturing Progress Function, January-February 1959, p. 39.
Seares, Al N., The Production of Values Added by Marketing, July-August 1959, p. 280.
Sespaniak, Lawrence J., An Application of Queueing Theory for Determining Manpower Requirements for an In-Line Assembly Inspection Department, July-August 1959, p. 265.
Shetty, C. M., Sensitivity Analysis in Linear Programming, September-October 1959, p. 379.
Shetty, C. M., Solving Linear Programming Problems with Variable Parameters, November-December 1959, p. 433.
Smalley, Harold E., Industrial Engineering in Hospitals, May-June 1959, p. 171.
Smirnoff, Michael V., Significant Figures in Measurements, March-April 1959, p. 91.
Smith, Sidney, Better Work Standards through Statistical Time Analysis, July-August 1959, p. 261.
Stewart, Lois A., (co-author), Competitive Management Simulation, September-October 1959, p. 355.
Thompson, James W., The Economic Management of Methods Development and Industrial Engineering, March-April 1959, p. 95.
Torgersen, Paul E., An Example of Work Sampling in the Hospital, May-June 1959, p. 197.
Villers, Raymond, The Scheduling of Engineering Research, November-December 1959, p. 419.
Wagner, Harvey M., Statistical Decision Theory as a Method for Information Processing, January-February 1959, p. 25.
Weston, Austin, (co-author), Summary of the Industrial Engineering Symposium, the University of Iowa, November 1958, July-August 1959, p. 323.
Wiebers, J. E., (co-author), A Method for Measuring Physiological Cost of Work, May-June 1959, p. 180.

TITLES AND SUBJECTS

AIIE

Gustat, George H., President's Message: Human Relations in the Industrial Engineer, January-February 1959, p. 67.
Gustat, George H., President's Message: The Importance of Participation, March-April 1959, p. 155.
Gustat, George H., President's Message: Tomorrow's Problems, Today's Opportunities, May-June 1959, p. 219.
Johnson, Cecil G., Summary of the Industrial Engineering Symposium, Georgia Institute of Technology, November 1957, May-June 1959, p. 223.
Johnson, Frank J., President's Message, July-August 1959, p. 332.
Johnson, Frank J., President's Message: Our Institute and Research, September-October 1959, p. 401.
Johnson, Frank J., President's Message: Professional Relations, November-December 1959, p. 477.
Malcolm, D. G., and Weston, Austin, Summary of the Industrial Engineering Symposium, the University of Iowa, November, 1958, July-August 1959, p. 323.

Data Processing

Canning, Richard G., and Grad, Burton, Information Process Analysis, November-December 1959, p. 470.
Gainen, Leon, Inventory Control—Exploiting the Electronic Data Processor in the Air Force, January-February 1959, p. 32.
Reed, Ruddell, Jr., A Planned Transition to Mechanized Inventory Control, May-June 1959, p. 201.

Decision Theory

Wagner, Harvey M., Statistical Decision Theory as a Method for Information Processing, January-February 1959, p. 25.

Engineering Economy

DeGarmo, E. Paul, and Rodgers, Joseph F., Reasons Used by Corporations to Justify Leasing of Trucks and Automobiles, March-April 1959, p. 152.
Gradwohl, A. J., and Grassi, R. C., Obsolescence and Economic Lot Size, September-October 1959, p. 352.

Inventory Control

Gaines, Leon, Inventory Control—Exploiting the Electronic Data Processor in the Air Force, January-February 1959, p. 32.
Morris, William T., Inventorying for Unknown Demand, July-August 1959, p. 299.
Reed, Ruddell, Jr., A Planned Transition to Mechanized Inventory Control, May-June 1959, p. 201.

Linear Programming

Greene, J. H., Chatto, K., Hicks, C. R., and Cox, C. B., Linear Programming in the Packing Industry, September-October 1959, p. 364.
Randolph, Paul H., Construction of Linear Programming Model, March-April 1959, p. 118.
Shetty, C. M., Sensitivity in Linear Programming, September-October 1959, p. 379.
Shetty, C. M., Solving Linear Programming Problems with Variable Parameters, November-December 1959, p. 433.

Measurement

Amrine, Harold T., and Nichols, D. Edward, A Physiological Appraisal of Selected Principles of Motion Economy, September-October 1959, p. 373.
Gambrell, C. B., Jr., The Independence of Pace Rating versus Weight Handled, July-August 1959, p. 318.
Greene, James H., Morris, W. H. M., and Wiebers, J. E., A Method for Measuring Physiological Cost of Work, May-June 1959, p. 180.
Greene, James H., and Morris, W. H. M., The Design of a Force Platform for Work Measurement, July-August 1959, p. 312.
Herrick, John S., Using Work Sampling to Study the Activities of Research Workers, January-February 1959, p. 60.

Ingenohl, Ingo, Measuring Physical Effort, March-April 1959, p. 99.
Klein, Morton, Double Sample Estimation in Work Measurement, May-June 1959, p. 193.
Mindlin, Albert, The Application of Sample Survey Methodology to Work Sampling, July-August 1959, p. 286.
Ritchey, John A., An Unusual Work Sampling Application, November-December 1959, p. 450.
Rockwell, Thomas H., Safety Performance Measurement, January-February 1959, p. 12.
Smirnoff, Michael V., Significant Figures in Measurements, March-April 1959, p. 91.
Smith, Sidney, Better Work Standards through Statistical Time Analysis, July-August 1959, p. 261.
Torgersen, Paul E., An Example of Work Sampling in the Hospital, May-June 1959, p. 197.

Methods

Amrine, Harold T., and Nichols, D. Edward, A Physiological Appraisal of Selected Principles of Motion Economy, September-October 1959, p. 373.
Guyatt, Cecil W., The Art of Methods Engineering, September-October 1959, p. 386.
Mellin, Warren R., What Is an Organized Methods Improvement Program?, November-December 1959, p. 426.
Thompson, James W., The Economic Management of Methods Development and Industrial Engineering, March-April 1959, p. 95.

Motivation and Wage Incentives

Cox, John M., Labor Incentives—A Failure and a Success, March-April 1959, p. 114.
Halty, Maximo, Incentive Wage Practice for Restricted Work, November-December 1959, p. 457.
Kilbridge, M. D., Predetermined Learning Curves for Clerical Operations, May-June 1959, p. 203.

Organization

Cochran, E. B., The Organization of Controllership, July-August 1959, p. 268.
Craft, Clifford J., and Stewart, Lois A., Competitive Management Simulation, September-October 1959, p. 355.
Francis, David L., Management and Industrial Engineering in the Coal Industry, September-October 1959, p. 347.
Kelly, Thomas E., How to Measure and Appraise your Industrial Engineering Department Performance, March-April 1959, p. 144.
McGuire, W. J., Operations Research in Management Planning and Control, July-August 1959, p. 308.
Mellin, Warren R., What Is an Organized Methods Improvement Program?, November-December 1959, p. 426.
Seares, Al N., The Production of Values Added by Marketing, July-August 1959, p. 280.

Philosophical and Historical

Bach, G. L., Industrial Administration: Education for 1980, September-October 1959, p. 390.
Chorafas, Dimitris N., Systems Engineering in the Engineering Curriculum, March-April 1959, p. 135.
DeForest, Elliott, People Are Funny: Industrial Engineering and the Human Equation, May-June 1959, p. 209.
Dudek, Richard A., An Approach to Promoting the Applications of Statistical Techniques by the Industrial Engineer, January-February 1959, p. 9.
Fougner, T. E., Notes on Industrial Engineering in Europe, November-December 1959, p. 461.
Gilbert, Owen, A Biologist in Steel, November-December 1959, p. 455.
Jaffe, William J., The Engineering Community and the Industrial Engineer, March-April 1959, p. 122.
Krick, Edward V., The Engineer and Resistance to Change, January-February 1959, p. 21.
Lehrer, R. N., The Challenge of Operations Research, March-April 1959, p. 87.
Maynard, Harold B., Industrial Engineering—Training for Management, January-February 1959, p. 3.
Nadler, Gerald, Work Design: A Philosophy for Applying Work Principles, May-June 1959, p. 185.
Perkowski, N., The Research Laboratory, July-August 1959, p. 255.
Richman, Eugene, and Ehrenfeld, Sylvain, Industrial Engineering Techniques and Operations Research, November-December 1959, p. 439.
Salveson, Melvin E., Long Range Planning in Technical Industries, September-October 1959, p. 339.
Smalley, Harold E., Industrial Engineering in Hospitals, May-June 1959, p. 171.

Production Planning and Control

Kraai, Erwin P., and Pounds, William F., Statistical Scheduling of a Highly Mechanized Production Facility, January-February 1959, p. 17.
Llewellyn, R. W., Order Sizes for Job Lot Manufacturing, May-June 1959, p. 176.
Mitten, L. G., A Scheduling Problem, March-April 1959, p. 131.
O'Connor, Thomas F., Cyclic Servicing, July-August 1959, p. 303.
Schultz, Andrew, Jr., and Conway, R. W., The Manufacturing Progress Function, January-February 1959, p. 39.
Villers, Raymond, The Scheduling of Engineering Research, November-December 1959, p. 419.

Quality Control

Colley, John L., Jr., Simulation as a Production Aid, July-August 1959, p. 296.
Howe, William G., and Peacor, Robert W., A Control Procedure Applied to Subjective Evaluations, March-April 1959, p. 138.
Kane, G. E., and Rokhsar, A. E., The Effect of Hypergeometric Probability Distribution on the Design of Sampling Plans for Small Lot Sizes, November-December 1959, p. 467.
Moder, Joseph J., and Oswalt, Jesse H., An Investigation of Some Factors Affecting the Hand Quality Picking of Small Objects, May-June 1959, p. 213.
Price, H. Walter, Least-Cost Testing Sequence, July-August 1959, p. 278.

Queueing Theory

Knowlton, Stuart L., A Simplified Approach to Waiting Lines, November-December 1959, p. 423.
Sespaniak, Lawrence J., An Application of Queueing Theory for Determining Manpower Requirements for an In-Line Assembly Department, July-August 1959, p. 265.

Safety

Rockwell, Thomas H., Safety Performance Measurement, January-February 1959, p. 12.

Value Analysis

Jacobs, Richard M., The Compatibility of Value Engineering Analysis and Reliability, January-February 1959, p. 54.

Successful ideas for increasing plant output with* AUTOMATION *fully outlined in this book

Just Published

PRACTICAL AUTOMATION

Methods for Increasing Plant Productivity

By L. R. Bittel, M. G. Melden, and R. S. Rice
Associate Editors, *Factory*

376 pp., 8½ x 11 illustrated $7.50

This book clearly explains and illustrates fundamental methods and thinking essential to planning and setting up for effective automation. It shows how to solve problems likely to be met in installing automation—how to combine machines and equipment already in the shop—where to look for possibilities of applying feedback control—how to solve new maintenance problems and personnel problems associated with automation. In short, it guides you in every practical aspect of automation. Every major area of plant operation which is affected—including production, maintenance, cost control, administration, methods, and inventory—is covered in a really practical way.

Order from:

The Journal of Industrial Engineering
A. French Building, 225 North Ave., N.W., Atlanta 13, Georgia